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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,561	01/25/2001	Anthony Johnston	101.002	4129

7590

05/21/2004

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EXAMINER

TRAN, LEN

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/769,561

Applicant(s)

JOHNSTON, ANTHONY

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 and 36-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-21 and 36-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

The oath/declaration is not signed.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-21 and 36-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zanna et al (US 4,714,592) or Mehta et al (US 3,663,179) or Fuchs (US 3,941,869) or EP 0 484 534, and further in view of D. Reay, "Learning from Experiences with Compact Heat Exchangers".

Zanna et al disclose a reactor comprising an outer wall, a plurality of heat exchangers arranged within the outer wall and an angle, a plurality of reaction zones separated by heat exchangers, baffles located within each reaction zone, wherein the configuration of the flow path is spiral, two concentric catalyst containment screens, the containment shell is cylindrical, and a

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first and second manifold (figures and col. 6, lines 35-60, col. 7, lines 59-69, col. 8 lines, 14-20, col. 9, lines 50-69, col. 13, lines 54-69).

Mehta et al disclose disclose a reactor comprising an outer wall, a plurality of heat exchangers arranged within the outer wall and an angle, a plurality of reaction zones separated by heat exchangers, baffles located within each reaction zone, wherein the configuration of the flow path is spiral, two concentric catalyst containment screens, the containment shell is cylindrical, and a first and second manifold (figures and col. 3, line 1 to col. 4, line 71).

Fuchs disclose a reactor comprising an outer wall, a plurality of heat exchangers arranged within the outer wall and an angle, a plurality of reaction zones separated by heat exchangers, baffles located within each reaction zone, wherein the configuration of the flow path is spiral, two concentric catalyst containment screens, the containment shell is cylindrical, and a first and second manifold (figures and col. 6, lines 19-35, col. 6, lines 43-col. 7, line 58).

EP '534 disclose a reactor comprising an outer wall, a plurality of heat exchangers arranged within the outer wall and an angle, a plurality of reaction zones separated by heat exchangers, baffles located within each reaction zone, wherein the configuration of the flow path is spiral, two concentric catalyst containment screens, the containment shell is cylindrical, and a first and second manifold (figures and abstract).

However, EP '534, Fuchs, Mehta et al, and Zanna et al fail to teach the baffle being corrugated or straight, and the heat exchangers being a PCHE (printed circuit heat exchanger).

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Reay discloses the advantage of using a PCHE, since the plates are diffusion bonded to form a compact and strong plates. In addition the channels are optimized to counterflow or to encourage turbulent flow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a PCHE instead of regular heat exchangers as taught by Reay, in EP '534, Fuchs, Mehta et al, and Zanna et al in order to form strong and compact plates along with optimizing the flow channels.

Furthermore, in light of the above teaching, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to make corrugated or straight baffles to conform with PCHEs.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran
Examiner
Art Unit 1725

LT
May 3, 2004

Kiley Stoner A4 1725
Kiley Stoner 5/18/04